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Title of Document Transmitted:	BRIEF OF APPELLANTS
Applicant:	Craig A. Finseth et al.
Serial No.:	09/536,101
Filed:	March 24, 2000
Group Art Unit:	2611
Title:	METHOD AND APPARATUS FOR WATERMARKING RECEIVED TELEVISION CONTENT
Our Ref. No.:	PD-990196

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CONTENT

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MAIL STOP APPEAL BRIEF - APPELLANTS

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Due Date: November 14, 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:

Inventor: Craig A. Finseth et al.

Serial #: 09/536,101

Filed: March 24, 2000

Title: METHOD AND APPARATUS FOR
WATERMARKING RECEIVED TELEVISION
CONTENT

Examiner: Hunter B. Lonsberry

Group Art Unit: 2611

Appeal No.: _____

BRIEF OF APPELLANTS

MAIL STOP APPEAL BRIEF - PATENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In accordance with 37 CFR §1.192, Appellants hereby submit the Appellants' Brief on Appeal from the final rejection in the above-identified application, as set forth in the Office Action dated May 5, 2005.

Please charge the amount of \$500 to cover the required fee for filing this Appeal Brief as set forth under 37 CFR §1.17(c) to Deposit Account No. 50-0494 of Gates & Cooper LLP. Also, please charge any additional fees or credit any overpayments to Deposit Account No. 50-0494.

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I. REAL PARTY IN INTEREST

The real party in interest is THE DIRECTV GROUP, INC., the assignee of the present application.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences for the above-referenced patent application.

III. STATUS OF CLAIMS

Claims 1-6, 8-14, 16-24, 26-34, and 36-62 are pending in the application.

Claims 19, 20, and 57-59 were rejected under 35 U.S.C. §102(e) as being anticipated in view of U.S. Publication Application No. US 2001/0013097 by Ito et al. (Ito), and these rejections are being appealed.

Claims 1, 2, 9-10, 17, 18, 27-30, 37-40, 44-56, and 60-62 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of U.S. Patent No. 6,674,858 to Kimura et al. (Kimura), and these rejections are being appealed.

Claims 3, 4, 11, 12, 31, 32, 41 and 42 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of Kimura and U.S. Publication Application No. US 2003/0011684, Narayanaswami et al. (Narayanaswami), and these rejections are being appealed.

Claims 21 and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of Narayanaswami, and these rejections are being appealed.

Claims 6, 14, 24, and 34 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of Kimura and in further view of U.S. Patent No. 6,137,952 issued to Hogan (Hogan), and these rejections are being appealed.

Claims 8, 16, 26, and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ito in view of Kimura and further in view of publication 2001/0013124 by Klosterman et al. (Klosterman), and these rejections are being appealed.

Claims 5, 13, 23, 33, and 43 were rejected under 36 U.S.C. § 103(a) as being unpatentable over Ito in view of Kimura, Narayanaswami, and further in view of U.S. Patent No. 6,615,408, issued to Kaiser et al (Kaiser), and these rejections are being appealed.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been made subsequent to the Final Office Action mailed August 5, 2005.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A. Independent Claim 1

Independent claim 1 recites a television system (Item 20 in FIG. 1, and specification text) that comprises a receiver (item 64, FIG. 2, and specification text page 5, line 7 to page 7, line 38) for receiving broadcast television content comprising multiple frames of data (FIG. 3, and specification text page 8, lines 4-25), a means for inserting multiple copies of receiver identification data into data representing a frame of the television content (CPU 74 and D/A 72, shown in FIG. 2 and described in the specification text at page 7 line 29 to page 12, line 15), and means for generating a display of television images based upon the data representing the television content and the receiver identification data (receiver 64, shown in FIG. 2 and described in the specification at page 6, lines 1-6).

B. Independent Claim 9

Independent claim 9 recites a method of modifying received television content. The method comprises the steps of receiving broadcast television content comprising a plurality of frames of data (FIG. 3, and specification text page 8, lines 4-25) with a receiver (item 64, FIG. 2, and specification text page 5, line 7 to page 7, line 38); inserting multiple copies of receiver identification data into data representing a frame of the television content (described in the specification text at page 7 line 29 to page 12, line 15); and generating a display of television images based upon the data representing the television content and the receiver identification data (described in the specification at page 6, lines 1-6).

C. Independent Claim 17

Independent claim 17 recites a receiver (item 64, FIG. 2, and specification text page 5, line 7 to page 7, line 38) for receiving broadcast television content having multiple frames of data (FIG. 3, and specification text page 8, lines 4-25) and inserting receiver identification data into generated images of television content in a manner that is undetectable to a casual observer of such images (CPU 74, shown in FIG. 2 and described in the specification text at

page 7 line 29 to page 12, line 15). The receiver comprises a tuner (item 70, FIG. 2 and described in the specification text at page 5, lines 7-16) for receiving a plurality of television channels and outputting a first television channel, a buffer (item 102, FIG. 3, and described in the specification text at page 7, line 29 to page 8 line 15) coupled to the tuner for storing a first image frame from the first television channel, the first image frame including a multiplicity of pixel data (described in the specification text at page 8, line 26 to page 9, line 3), a memory (item 78, FIG. 2, and described in the specification text at page 9, lines 15-24) for storing identification data that provides a unique identification of the receiver, a controller (item 105, FIG. 3) coupled to the buffer and the memory, the controller retrieving identification data (described in the specification text at page 2, lines 17-21 and page 7, line 30 to page 8, line 1) from the memory and changing values of the pixel data to values of the identification data, the controller thereby embedding multiple copies of the identification data into the first image frame (described in the specification at page 8, line 26 to page 12, line 15); and a display generator (receiver 64, shown in FIG. 2 and described in the specification at page 6, lines 1-6) for generating a display of the first television channel including the first image frame.

D. Independent Claim 18

Independent claim 18 recites a method of receiving broadcast television content having multiple frames of data (FIG. 3, and specification text page 8, lines 4-25) with a receiver (item 64, FIG. 2, and specification text page 5, line 7 to page 7, line 38) and inserting receiver identification data into generated images of television content in a manner that is undetectable to a casual observer of such images (described in the specification text at page 7 line 29 to page 8, line 25). The method comprises receiving a plurality of television channels with a tuner (item 70, FIG. 2 and described in the specification text at page 5, lines 7-16) and outputting a first television channel (page 8, lines 4-5); storing a first image frame from the first television channel (page 8, lines 9-15), the first image frame including a multiplicity of pixel data; storing identification data that provides a unique identification of the receiver (memory 78 and/or access card 88, page 9, lines 15-24); modifying a subset of the pixel data to represent the multiple copies of the identification data, multiple copies of the identification data thereby being embedded into the first image frame (described in the specification at page 8, line 26 to page 12, line 15); and generating a display of the first

television channel including the first image frame (described in the specification at page 6, lines 1-6).

E. Independent Claim 19

Independent claim 19 recites a program reception system. The system comprises a receiver (item 64, FIG. 2, and specification text page 5, line 7 to page 7, line 38) for receiving transmitted data representing program content comprising multiple frames (FIG. 3, and specification text page 8, lines 4-25); means for modifying a frame of the data representing the program content to include multiple copies of receiver identification data (CPU 74, D/A 72 in FIG. 2, described in the specification text at page 7 line 29 to page 12, line 15); and means for providing the modified data representing the program content to a presentation device (TV 66, FIG. 2, and described in the specification at page 8, lines 16-25).

F. Independent Claim 27

Independent claim 27 recites a method of modifying received program content. The method comprises receiving (item 64, FIG. 2, and specification text page 5, line 7 to page 7, line 38) broadcast data representing program content having multiple frames (FIG. 3, and specification text page 8, lines 4-25); modifying a frame of the data representing the program content to include multiple copies of the receiver information data (described in the specification text at page 7 line 29 to page 12, line 15); and providing the modified data representing the program content to a presentation device.

G. Independent Claim 37

Independent claim 37 recites a receiver (item 64, FIG. 2, and specification text page 5, line 7 to page 7, line 38) for receiving transmitted program content having multiple frames of data (FIG. 3, and specification text page 8, lines 4-25). The receiver comprises a tuner, for receiving at least one of a plurality of program channels (item 70, FIG. 2 and described in the specification text at page 5, lines 7-16); a memory, communicatively coupled to the tuner for storing at least a portion of data representing the program content (item 78, FIG. 2, and described in the specification text at page 9, lines 15-24); and a controller (item 105, FIG. 3), communicatively coupled to the memory, the controller for modifying at least a portion of a

frame of the data representing program content according to multiple copies of the receiver identification data (described in the specification text at page 7 line 29 to page 12, line 15).

H. Independent Claim 44

Independent claim 44 recites an article of manufacture (described in the specification at page 5, lines 17-30) embodying logic for computing a plurality of order-based analysis functions for records stored in a table in a computer system. The article of manufacture comprises means for receiving broadcast data representing program content (item 64, FIG. 2, and specification text page 5, line 7 to page 7, line 38) having multiple frames (FIG. 3, and specification text page 8, lines 4-25); means for modifying a frame of the data representing the program content to include multiple copies of the receiver information data (described in the specification text at page 7 line 29 to page 12, line 15); and means for providing the modified data representing the program content to a presentation device.

I. Claims Using Functional Language

1. Claim 45

Claim 45 recites that the means for inserting multiple copies of receiver identification data into data representing a frame of the television content (as described in claim 1) comprises means for dividing the frame into a plurality of groups, means for inserting a copy of the receiver identification data in each of the plurality of groups (described in the specification at page 9, lines 4-6, page 9, lines 28-30).

2. Claim 51

Claim 51 recites that in the receiver of claim 17, the controller comprises means for dividing the first image frame into a plurality of groups and means for inserting a copy of the receiver identification data in each of the plurality of groups (described in the specification at page 9, lines 4-6, page 9, lines 28-30).

3. Claim 53

Claim 53 recites that the receiver of claim 52 comprises a plurality of pixels, and that the means for inserting a copy of the receiver identification data in each of the plurality of

groups comprises means for repeatedly substituting a bit of the identification data for a bit of a pixel of the line and skipping a plurality of pixels for each of the lines in the group (described in the specification at page 10, lines 3-25).

4. Claim 57

Claim 57 recites that the means for modifying the frame of data representing the program content to include multiple copies of receiver identification data comprises means for dividing the frame into a plurality of groups and means for inserting a copy of the receiver identification data in each of the plurality of groups (described in the specification at page 9, lines 4-6, page 9, lines 28-30).

5. Claim 59

Claim 59 recites that the program reception system of claim 58, and in which the means for inserting a copy of the receiver identification data in each of the plurality of groups comprises means for repeatedly substituting a bit of the receiver identification data for a bit of a pixel of the line and skipping a plurality of pixels for each of the lines in the group (described in the specification at page 10, lines 3-25).

6. Claim 62

Claim 62 recites that the means for inserting a copy of the receiver identification data in each of the plurality of groups comprises means for repeatedly substituting a bit of the receiver identification for a bit of a pixel of the line and skipping a plurality of pixels for each of the lines in the group (described in the specification at page 10, lines 3-25).

VI. GROUNDS FOR REJECTION TO BE REVIEWED UPON APPEAL

Whether claims 1-6, 8-14, 16-24, 26-34, and 36-62 are pending in the application.

Whether claims 19, 20, and 57-59 were rejected under 35 U.S.C. §102(e) as being anticipated in view of U.S. Publication Application No. US 2001/0013097 by Ito et al. (Ito).

Whether claims 1, 2, 9-10, 17, 18, 27-30, 37-40, 44-56, and 60-62 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of U.S. Patent No. 6,674,858 to Kimura et al. (Kimura).

Whether claims 3, 4, 11, 12, 31, 32, 41 and 42 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of Kimura and U.S. Publication Application No. US 2003/0011684, Narayanaswami et al. (Narayanaswami).

Whether claims 21 and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of Narayanaswami.

Whether claims 5, 13, 23, 33, and 43 were rejected under 36 U.S.C. § 103(a) as being unpatentable over Ito in view of Kimura, Narayanaswami, and further in view of U.S. Patent No. 6,615,408, issued to Kaiser et al. (Kaiser).

Whether claims 6, 14, 24, and 34 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of Kimura and in further view of U.S. Patent No. 6,137,952 issued to Hogan (Hogan).

Whether claims 8, 16, 26, and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ito in view of Kimura and further in view of publication 2001/0013124 by Klosterman et al. (Klosterman).

VII. GROUPING OF CLAIMS

The rejected claims do not stand or fall together. Each claim is independently patentable. Separate arguments for the patentability of each claim are provided below.

VIII. ARGUMENTS

A. Summary

Ito (U.S. Publication No. 2001/0013097) fails to teach, disclose, or suggest modifying *a frame* of data representing program content to include *multiple copies of receiver identification data*. Ito teaches inserting ID data into a group of pixels that are a subset of a frame (e.g. a 3x3 pixel area), but does not teach inserting *multiple copies* of the same ID data into a single frame. Ito also teaches spreading ID information over several image frames, but nowhere remotely suggests modifying a frame of data to include *multiple copies* of receiver identification data.

B. The Cited References

1. The Ito Reference

U.S. Publication Application No. US 2001/0013097 discloses a method and apparatus for imprinting ID information into digital content and for reading the digital content out. After digital content is loaded into an information terminal such as a PC, ID information unique to a viewer or a user of the PC is imprinted into the content. The ID information is imprinted into a predetermined location of the content or alternatively, it may be imprinted over the entire content in the form of a spatial frequency. The content with an ID added thereto is then enabled to be used in the terminal.

2. The Kimura Reference

U.S. Patent No. 6,674,858 discloses a receiving, recording and reproducing device and system for a digital broadcast signal. The receiving device comprises a signal demodulator circuit for demodulating an encrypted video signal and attribute information including information for decoding an encryption, an attribute information identifying circuit for identifying and outputting the attribute information, and a descramble circuit for unscrambling the video signal obtained from the signal demodulator circuit, based on the output produced from the attribute information identifying circuit. A signal re-scrambled in accordance with a device ID signal is recorded in a recording and reproducing device. Further, the recording of the signal is controlled based on the output obtained from the attribute information identifying circuit.

3. The Narayanaswami Reference

U.S. Publication Application No. US 2003/0011684 discloses an image capturing system and method for automatically watermarking a plurality of recorded camera and image parameters such as the location (latitude, longitude and altitude), orientation of the principal axis of the camera, whether the camera is in landscape mode or portrait mode, camera velocity, photographer information, time and date, zoom factor, shutter speed, flash on/off, autofocus distance, lightmeter reading, focal length and aperture into every captured image. This watermarked data can be subsequently extracted and compared with the originally recorded data so as to verify the authenticity of a corresponding image. Since the critical data is invisibly watermarked into the image, it is difficult to modify the image without affecting the watermarked data.

4. The Kaiser Reference

U.S. Patent No 6,615,408 discloses a method, apparatus and system for providing action selections to an image referencing a product in a video production. The method for providing action selections to an image referencing a product in a video production includes (1) communicating a video production to a reproducing apparatus, said video production comprising a placement zone and a trigger zone at least partially coincident with said placement zone, wherein said trigger zone comprises a trigger resource identifier, and wherein said placement zone comprises an image referencing a product; (2) communicating to said reproducing apparatus an indication that an action selection interface associated with said product is available in response to a request corresponding to said trigger; and (3) communicating to said reproducing apparatus a characterization of said action selection interface, wherein said action selection interface comprises a selectable action. The system may include the facility communicating the video production to the reproducing apparatus which sends a request to the server which provides action resources.

5. The Hogan Reference

U.S. Patent No. 6,137,952 discloses a system whereby image-distorting artifacts are added to selected areas of a color image. A first artifact change is made to a luminance component of a selected area, and at least one other artifact change is made to chrominance components of the selected area. The artifact changes are perceptively balanced such that the

artifacts are not perceptible when the image is displayed on a monitor. For example, changes in saturation are selected to balance changes in intensity of luminance. However, when the image is filtered such that one of the artifacts is modified, the remaining artifact becomes visible. Such filtering might be performed by an RGB-to-NTSC converter. Thus, if the RGB-to-NTSC converter is used between an RGB output of DVD-ROM electronics and a computer monitor (in an attempt to make an unauthorized copy), the video signal leaving the RGB-to-NTSC converter will contain perceptible artifacts and, therefore, images of reduced viewability. Consequently, attempts to make unauthorized copies of DVD discs onto NTSC-type videocassettes will be discouraged.

6. The Klosterman Reference

Published Patent Application 2001/0013124 to Klosterman et al. discloses a method and system to substitute alternative video and/or audio signals and/or graphics and/or text to be displayed on the viewer's television display monitor for the video and/or audio signals that would otherwise be displayed according to the channel to which the viewer has tuned the television set. The system and method provides methods and systems to replace and/or modify the advertisements that can be seen and heard by the television viewer.

C. Rejections Under 35 U.S.C. § 102(e)

1. Claims 19, 20, and 57-59 are Patentable Over the Cited References Under 35 U.S.C. § 102(e).

The Final Office Action rejects claims 19, 20, and 57-59 as unpatentable under 35 U.S.C. § 102(e) over the Ito reference. The Applicants respectfully traverse these rejections.

With Respect to Claim 19: The Final Office Action rejected claim 19 as unpatentable over the Ito reference. The Applicants respectfully traverse. Claim 19 recites:

*A program reception system comprising:
a receiver for receiving transmitted data representing program content comprising multiple frames;
means for modifying a frame of the data representing the program content to include multiple copies of receiver identification data; and
means for providing the modified data representing the program content to a presentation device.*

The rejections rely on the following portions of the Ito reference:

[0044] FIG. 8 is a diagram explaining a method for imprinting a bit pattern containing ID information, such as that shown in FIG. 7, onto the decoded image (the digital content). In this example, luminance values of the pixels of the decoded image are expressed in eight-bit binary data. The ID information is imprinted in the decoded image by replacing the LSB of the luminance value of each pixel by the value of the corresponding pixel in the bit pattern containing the ID information. Thus, in this example, the LSB of a pixel in the decoded image located in an area corresponding to a shaded area in FIG. 7 is replaced by "1", and the LSB of a pixel located in an area corresponding to a unshaded area in FIG. 7 is replaced by "0." The remaining seven bits of the luminance value of the pixel are unchanged from the decoded image. Thus, in this embodiment, an ID is imprinted over the entire image or an extended portion thereof. This method is advantageous as a countermeasure

against partial cut-off of the content, as the extended portion over which the ID is imprinted may be chosen such that the cut off of which would substantially impair the usefulness of the content.

[0055] Eighth, although the ID information for one user is represented by one point in the frequency domain (FIG. 6), the ID information may be represented in other forms. For instance, a set of a plurality of discrete points or a two dimensional region may be employed to represent the ID information for one user.

[0049] Fourth, although an ID is imprinted into a lower bit irrespective of upper bits in the aforementioned embodiment, an offset may be given to a lower bit such that the whole data including upper bits contains the ID.

[0050] FIG. 13 shows an example of a 3x3 pixel area in a content such as an image, where the luminance of the respective pixels are "10, 8, 0 . . ." as shown. FIG. 14 is a diagram showing the luminance of the same 3x3 pixel area in the image, but expressed using modulo 3 arithmetic. Using this arithmetic, the corresponding value of a pixel whose luminance is 10, for instance, becomes 1. FIG. 15 is a diagram showing a sample data pattern representing ID information, generated using methods described earlier, to be imprinted into the 3x3 pixel area of the image shown in FIG. 14. The ID pattern is also expressed in modulo 3 arithmetic. In this example, 0's, 1's, and 2's are to be imprinted into the first, second, and third rows of pixels, respectively. FIG. 16 is a diagram showing the state in which an offset of -1, 0, or 1 is added to each pixel value of the 3x3 pixel area shown in FIG. 14 to obtain the corresponding pixel value of the 3x3 pixel area shown in FIG. 15. In operation, the ID information is imprinted into the 3x3 pixel area of the image shown in FIG. 13 by adding to each pixel an offset value -1, 0 or 1 according to the calculation shown in FIG. 16. According to this method, an offset is added to the luminance data as a whole, so that the whole data, including the upper bits, contain the ID.

According to the Final Office Action mailed August 5, 2004 2005:

“Since the ID information can be attached to numerous pixels and groups of pixels, multiple copies of the ID are therefore inserted into one frame of programming data.”

The Applicants disagreed and pointed out that the foregoing teaches inserting ID data into groups of pixels. But claim 1 recites modifying a frame of the data representing program content to include *multiple copies* of the receiver ID data. The two are plainly not the same.

The Final Office Action dated May 5, 2005 further explained:

“Examiner asserts that Ito clearly shows imprinting multiple copies of the ID on the image. Ito shows imprinting the ID in the LSB of the luminance value of *each* pixel (page 3 section 0044, imprinting ID on the luminance value of multiple pixels). Since multiple pixels will be imprinted with the ID, multiple copies are used. Furthermore, Ito shows that the ID is imprinted over the entire image (page 3 section 0044). This is to protect against partial cut-off of the content (page 3 section 0044). This clearly indicates that multiple copies are used in multiple pixels in the case that some of the pixels that have the data are not received properly. The system can choose from several pixels to choose the ID so that it will always have a source of the ID. If only one single ID data was spread out over the entire image, this would then preclude the system from retrieving the correct ID if an error occurred.”

The Applicants can only respond that none of the foregoing statements supports the Examiner’s conclusion that Ito discloses including multiple copies of receiver ID data in a single frame. Ito’s ID may be imprinted across multiple pixels, but that is NOT the same thing as multiple IDs in a single frame. Further Ito’s ID may be imprinted across the entire image, but does not teach imprinting multiple copies of the ID in a frame (in fact, it plainly teaches away from it).

What is relevant is what Ito would fairly teach to one of ordinary skill in the art, and without the use of convoluted arguments guided by hindsight reconstruction. Viewed against this standard, these rejections must plainly be reversed.

Claim 20 is patentable for the same reasons.

With Respect to Claims 57-58: Claim 57 recites a means for dividing the frame into a plurality of groups and for inserting a copy of the receiver identification data in each of the plurality of groups. Again, since Ito discloses spreading ID information among pixels, it does not teach, and in fact, teaches away from inserting more than one copy of the receiver data within a frame. Ito discloses dividing the frame into a plurality of groups and teaches

inserting ID data into a group of pixels, but does not teach inserting a copy of the receiver identification data into *each* of the *plurality* of groups. Claim 58 is patentable for the same reason.

D. Rejections Under 35 U.S.C. § 103(a)

1. Claims 1, 2, 9-10, 17, 18, 24, 27-30, 37-40, 44-56, and 60-62 Are

Patentable Over the Ito in view of Kimura Under 35 U.S.C. § 103(a)

Claims 1, 2, 9-10, 17, 18, 24, 27-30, 37-40, 44-56, and 60-62 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ito in view of Kimura.

With Respect to Claims 1, 9, and 27: Claim 1 recites

*A television system comprising:
a receiver for receiving broadcast television content comprising multiple frames of data;
means for inserting multiple copies of receiver identification data into data representing a frame of the television content; and
means for generating a display of television images based upon the data representing the television content and the receiver identification data.*

The First Office Action suggested that Ito disclosed “inserting multiple copies of the receiver identification data into data representing a frame of the television content” as follows:

[0047] Second, although a still image is used in the above-described embodiments as an example of a digital content, the methods may be applied to other types of digital content, such as motion images (e.g. video) or audio content. For motion images, ID information may be divided into plural portions and different portions may be imprinted into different image frames. For audio content, the image decoder 14, the display controller 20, and the display 24 in FIG. 3 may be replaced by an audio decoder, an audio output controller, and a speaker, respectively. Further, one-dimensional IFFT is sufficient for audio content, as it is one dimensional data. In addition, although ID information is imprinted into the bits of the luminance values in the case of images, it may be imprinted into the LSBs of frequency signals or the like in the case of an audio content.

The Applicants respectfully suggested that the foregoing teaches spreading ID information into several image frames, not placing multiple copies of ID information into a single frame, and that this teaches the *opposite* of the invention described in claim 1.

The Final Office Action mailed August 5, 2004 replied:

Examiner asserts that Ito shows the *ability* to insert multiple copies of the ID data into data representing a frame of the television content. Ito shows a number of ways of inserting ID data into a frame, including inserting the ID data into the luminance value of each pixel (page 3, sections 0044) and inserting the ID data into groups of pixels (i.e. 3x3 group of pixels) (page 3 sections 0049-0050, page 4 section 0055). Since the ID information *can be* attached to numerous pixels and groups of pixels, multiple copies of the ID are therefore inserted into one frame of programming data. (emphasis added)

The foregoing statement appeared to recognize that the Ito reference does not disclose a system that *actually inserts* multiple copies of receiver identification data into data representing a frame of the television content, but to reject claim 1 because the Examiner believes that it has the *ability* to be used to insert multiple copies of receiver identification into data representing a frame of the television content (or that it *can be* used this way).

The Final Office Action mailed February 5, 2005 clarified:

"It is not asserted that Ito *may have the ability* or that it is inherent. The Examiner used the word "ability" to convey that Ito has the functional capability and in fact does disclose the claimed limitation. For further explanation, see the above paragraph regarding claims 19, 57, and 58."

The Examiner relies upon the following to argue that multiple copies of receiver ID are inserted into data representing a frame of the television content:

[0044] FIG. 8 is a diagram explaining a method for imprinting a bit pattern containing ID information, such as that shown in FIG. 7, onto the decoded image (the digital content). In this example, luminance values of the pixels of the decoded image are expressed in eight-bit binary data. The ID information is imprinted in the decoded image by replacing the (LSB) of the luminance value of each pixel by the value of the corresponding pixel in the bit pattern containing the ID information. Thus, in this example, the LSB of a pixel in the decoded image located in an area corresponding to a shaded area in FIG. 7 is replaced by "1", and the LSB of a pixel located in an area corresponding to an unshaded area in FIG. 7 is replaced by "0." The remaining seven bits of the luminance value of the pixel are unchanged from the decoded image. Thus, in this embodiment, an ID is imprinted over the entire image or an extended portion thereof. This method is advantageous as a countermeasure

against partial cut-off of the content, as the extended portion over which the ID is imprinted may be chosen such that the cut off of which would substantially impair the usefulness of the content.

[0055] Eighth, although the ID information for one user is represented by one point in the frequency domain (FIG. 6), the ID information may be represented in other forms. For instance, a set of a plurality of discrete points or a two dimensional region may be employed to represent the ID information for one user.

[0049] Fourth, although an ID is imprinted into a lower bit irrespective of upper bits in the aforementioned embodiment, an offset may be given to a lower bit such that the whole data including upper bits contains the ID.

[0050] FIG. 13 shows an example of a 3x3 pixel area in a content such as an image, where the luminance of the respective pixels are "10, 8, 0 . . ." as shown. FIG. 14 is a diagram showing the luminance of the same 3x3 pixel area in the image, but expressed using modulo 3 arithmetic. Using this arithmetic, the corresponding value of a pixel whose luminance is 10, for instance, becomes 1. FIG. 15 is a diagram showing a sample data pattern representing ID information, generated using methods described earlier, to be imprinted into the 3x3 pixel area of the image shown in FIG. 14. The ID pattern is also expressed in modulo 3 arithmetic. In this example, 0's, 1's, and 2's are to be imprinted into the first, second, and third rows of pixels, respectively. FIG. 16 is a diagram showing the state in which an offset of -1, 0, or 1 is added to each pixel value of the 3x3 pixel area shown in FIG. 14 to obtain the corresponding pixel value of the 3x3 pixel area shown in FIG. 15. In operation, the ID information is imprinted into the 3x3 pixel area of the image shown in FIG. 13 by adding to each pixel an offset value -1, 0 or 1 according to the calculation shown in FIG. 16. According to this method, an offset is added to the luminance data as a whole, so that the whole data, including the upper bits, contain the ID.

Nothing in the foregoing remotely suggest the claimed feature. Ito suggests the opposite . . . splitting information for a single ID into several frames:

[0047] Second, although a still image is used in the above-described embodiments as an example of a digital content, the methods may be applied to other types of digital content, such as motion images (e.g. video) or audio content. For motion images, ID information may be divided into plural portions and different portions may be imprinted into different image frames. For audio content, the image decoder 14, the display controller 20, and the display 24 in FIG. 3 may be replaced by an audio decoder, an audio output controller, and a speaker, respectively. Further, one-dimensional IFFT is sufficient for audio content, as it is one dimensional data. In addition, although ID information is imprinted into the bits of the luminance values in the case of images, it may be imprinted into the LSBs of frequency signals or the like in the case of an audio content.

Claims 9 and 27 recite analogous features and is patentable for the same reasons.

With Respect to Claim 17: Claim 17 recites a controller that embeds multiple copies of the identification data into the first image frame. As discussed above, the Ito reference fails to disclose or discuss this feature. Claim 17 is therefore patentable over the cited references.

With Respect to Claim 18: Claim 18 recites modifying a subset of pixel data to insert multiple copies of the identification data. As described above, Ito fails to disclose this

feature.

With Respect to Claim 37: Claim 37 recites a controller for modifying a portion of a frame according to *multiple copies* of the receiver identification data. As described above, Ito fails to disclose this feature

With Respect to Claim 44: Claim 44 recites the step of modifying a frame of the data representing the program content to include multiple copies of the receiver identification data. As described above, Ito fails to disclose this feature.

With Respect to Claims 45, 46, 48, 49, 51, 52, 54, 55, 57, 58, 60, and 61: Claim 45 recites a means for dividing the frame into a plurality of groups and for inserting a copy of the receiver identification data in each of the plurality of groups. Again, since Ito discloses spreading ID information among pixels, it does not teach, and in fact, teaches away from inserting more than one copy of the receiver data within a frame. Ito discloses dividing the frame into a plurality of groups and teaches inserting ID data into a group of pixels, but does not teach inserting a copy of the receiver identification data into *each* of the *plurality* of groups. Claim 46 recites each of the groups comprises a plurality of lines and is patentable for the same reasons. Claims 48, 49, 51, 52, 54, 55, 57, 58, 60, and 61 recite features analogous to those of claims 45 and 46 and are patentable as well.

With Respect to Claims 47, 50, 53, 56, 59, and 62: Claim 47 recites that the plurality of lines recited in claim 46 each comprises a plurality of pixels, and also recites that means for repeatedly substituting a bit of the receiver identification data for a bit of a pixel in the line and skipping a plurality of pixels, for each of the lines in the group. The Office Action argues that the “skipping” feature is disclosed by Ito because it teaches “modulo 3 arithmetic” that *can* add 0 to the pixel value, which does not change the value and substantially skips a pixel. Respectfully, adding a zero to a pixel is not analogous to skipping a pixel. The same result may be achieved, but not the same way. The analysis of claims 50, 53, 56, 59, and 62 is analogous.

With Respect to Claims 2, 10, 28, 29, 30, 39, and 40: These claims incorporate the features of the claims they depend upon and are patentable on the same basis.

2. Claims 3, 4, 11, 12, 31, 32, 41, and 42 are Patentable Over Ito in view of Kimura in view of Narayanaswami Under 35 U.S.C. § 103(a)

With Respect to Claims 3, 4, 11, 12, 21, 22, 31, 32, 41, and 42: Claims 3, 4, 11, 12, 31, , 32, 41, and 42 stand rejected as unpatentable over Ito in view of Kimura in view of Narayanaswami .

Claim 3 recites that the receiver identification data includes a date stamp representing the date that the receiver identification data was inserted into the data representing the television content. Claim 4 recites a similar feature, but with respect to a time stamp. The Final Office Action indicates that these features are found in the following portion of the Narayanaswami reference:

[0004] It is often necessary to determine the conditions and circumstances (such as time, date, and location) in connection with the capturing of an image. For instance, such information can be of immense value to insurance agencies (e.g., real-estate, auto, and fire), hospitals, news agencies and crime investigating agencies, for confirming the details surrounding an accident so as to assist in the investigation of the accident and preparing the necessary accident reports. Moreover, this information would also be useful for image search algorithms that are based on such information. Therefore, an image capturing device which can automatically record a plurality of parameters with each captured image, such as names of geographic locations, altitude, longitude, time, date, photographer identification, as well as image data such as light intensity, shutter speed and flash status, would be very useful to such agencies.

[0005] Furthermore, an image capturing system which could automatically watermark (i.e., hide) the plurality of recorded parameters into each image would be useful for verifying the authenticity of digital pictures, as well as verifying and confirming the circumstances and conditions surrounding the capturing of the digital image. In general, the ability to prove the authenticity of digital images is a burdensome task because there are various commercially available software applications which allow users to manipulate and modify digital images. Therefore, by invisibly watermarking parameters associated with a digital image within the image, the authenticity of the digital image may subsequently be verified by extracting the watermarked parameters and then comparing the extracted parameters with the initially recorded parameters to determine whether they are similar.

However, the foregoing discloses imprinting the date that the image was created, not the *date that the receiver identification was inserted into the data representing the television content* as recited in the claim 3. The Final Office Action argues that it would have been obvious to modify Ito and Kimura to insert “date data so that one could identify when an image was displayed”. Even if that were true and not the product of hindsight reconstruction, that is not what claim 3 recites. Claim 4 is patentable for analogous reasons.

Claims 11, 12, 31, 32, 41, and 42 recite analogous features and are patentable for the same reasons.

3. Claims 21 and 22 are Patentable Over Ito in view of Narayanaswami Under 35 U.S.C. § 103(a).

Claims 21 and 22 recite features analogous to those of claims 3 and 4 (which stand rejected as unpatentable over Ito in view of Kimura and Narayanaswami). Yet, claims 21 and 22 stand rejected as unpatentable over Ito and Narayanaswami alone. Claims 21 and 22 are allowable for the same reasons described above with respect to claims 3 and 4.

4. Claims 5, 13, 23, 33, and 43 are Patentable Over Ito in View of Kimura, in View of Narayanaswami, and Further in View of Kaiser Under 35 U.S.C. § 103(a).

With Respect to Claims 5, 13, 23, 33, and 43: These claims, which were rejected under 35 U.S.C. §103(a) as unpatentable over Ito in view of Kimura, in view of Narayanaswami and further in view of Kaiser (4 references) recite that the receiver identification data is obtained from a removable access card having billing data. The Final Office Action mailed August 5, 2004 acknowledged that even when combined, Ito, Kimura, and Narayanaswami do not disclose this feature, and initially argued that it would be obvious to modify Ito and Kimura to result in the “ability to use a removable access card so that users could easily be changed by swiping their individual cards.”

The Final Office Action mailed August 28, 2005 now argues that the features of the foregoing claims are disclosed by Kaiser, and that one of ordinary skill in the art would have been motivated to modify the system of Ito, Kimura, and Narayanaswami with the ability to “use billing information on a card, so that the system would be able to embed a variety of receiver data into the watermark and determine appropriate billing for the functions.”

However, nothing in the Kaiser reference nor in any of the references of record teaches modifying Ito, Kimura, and Narayanaswami as proposed. The Applicants therefore respectfully traverse.

5. Claims 6, 14, 24, and 34 Are Patentable over Ito in view of Kimura and Further in View of Hogan Under 35 U.S.C. § 103(a).

With Respect to Claim 6, 14, 24, and 34: Claim 6 recites that the receiver identification data is inserted into the data representing the television content by modifying the saturation data of the television content. The Final Office Action dated August 5, 2004 asserts that this is disclosed as follows,

[0038] FIG. 4 is a diagram showing an internal structure of the ID imprinter 18 shown in FIG. 3 according to one embodiment of the present invention. The imprinter 18 comprises an ID reader 30 for reading an ID from the ID holder 16, a decoded image reader 32 for reading a decoded image, and a combiner 34 for imprinting an ID into a predetermined location such as the leading, middle, or trailing part of the decoded image data. When an ID consists of n bits of data and the luminance of image pixels in the content is expressed in multiscale, the combiner 34 for instance sequentially replaces the least significant bits (LSBs) of the luminance of n pixels from the leading part of the image by the n bits of ID data.

However, as described in the Applicant's specification at page 9, lines 1-3, "luminescence data" is not "saturation data". Once again, Ito teaches away from the Applicants' invention.

In the Final Office Action mailed May 5, 2005, the Examiner relies on Hogan, and argues that it would have been obvious to "use the saturation data to include a watermark, as shown in Hogan, so that the system would have a wide variety of data to manipulate to include the watermark and prevent unauthorized copying."

The Applicants respectfully disagree that there is a teaching to combine the Ito and Hogan references. In fact, the two references appear to be incompatible. Ito is directed to a system for invisibly watermarking content, while Hogan is directed to a system that uses changes in saturation data to deliberately distort images with watermarks.

The analysis of claims 14, 24, and 34 is analogous.

6. Claims 8, 16, 26, and 36 are Patentable Over Ito in View of Kimura and Further in View of Klosterman Under 35 U.S.C. § 103(a).

With Respect to Claim 8, 16, 26, 36: Claim 8 recites that the receiver identification data is inserted into data representing the program guide images prior to their display rather than television content. The Final Office Action mailed February 5, 2005, acknowledges that Ito and Kimura fail to show displaying program guide data, but assert that Klosterman shows sending advertisements to users that are viewed in an EPG, which may include embedded customized information.

However, Klosterman discloses that any such "watermarking" occurs in the head end, not the receiver or similar structures, as recited in claims 8 and 26. Similarly, claim 16 depends on claim 9, which recites that the method is for modifying received television content. Klosterman teaches receiving EPG information that has been modified by the head end, not receiving information by the head end and modifying it. Claim 36 depends on claim 27, which also recites a method for modifying received program content.

IX. CONCLUSION

In light of the above arguments, Appellants respectfully submit that the cited references do not anticipate nor render obvious the claimed invention. More specifically, Appellants' claims recite novel physical features which patentably distinguish over any and all references under 35 U.S.C. §§ 102 and 103. As a result, a decision by the Board of Patent Appeals and Interferences reversing the Examiner and directing allowance of the pending claims in the subject application is respectfully solicited.


Respectfully submitted,

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Enclosures: Claims Appendix
Evidence Appendix
Related Proceedings Appendix

G&C 109.24-US-U1

X. CLAIMS APPENDIX

1. (PREVIOUSLY PRESENTED) A television system comprising:
a receiver for receiving broadcast television content comprising multiple frames of data;
means for inserting multiple copies of receiver identification data into data representing a frame of the television content; and
means for generating a display of television images based upon the data representing the television content and the receiver identification data.
2. (ORIGINAL) The television system of Claim 1, wherein the receiver identification data includes at least one of a receiver serial number, a name of an owner of the receiver, an address of an owner of the receiver, a phone number of an owner of the receiver, a name of a manufacturer of the receiver and a model name of the receiver.
3. (ORIGINAL) The television system of Claim 1, wherein the receiver identification data includes a date stamp representing the date on which the receiver identification data was inserted into the data representing the television content.
4. (ORIGINAL) The television system of Claim 1, wherein the receiver identification data includes a time stamp representing the time at which the receiver identification data was inserted into the data representing the television content.
5. (ORIGINAL) The television system of Claim 1, further comprising a removable access card that stores television channel access data and billing data, and wherein the receiver identification data is obtained from the removable access card.
6. (ORIGINAL) The television system of Claim 1, wherein the receiver identification data is inserted into the data representing the television content by modifying saturation data of the television content.

7. (CANCELED)

8. (ORIGINAL) The television system of Claim 1, wherein the means for generating a display of television images generates a display of program guide images, and wherein the means for inserting inserts receiver identification data into data representing the program guide images prior to their display.

9. (PREVIOUSLY PRESENTED) A method of modifying received television content comprising:

receiving broadcast television content comprising a plurality of frames of data with a receiver;

inserting multiple copies of receiver identification data into data representing a frame of the television content; and

generating a display of television images based upon the data representing the television content and the receiver identification data.

10. (ORIGINAL) The method of Claim 9, wherein the receiver identification data includes at least one of a receiver serial number, a name of an owner of the receiver, an address of an owner of the receiver, a phone number of an owner of the receiver, a name of a manufacturer of the receiver and a model name of the receiver.

11. (ORIGINAL) The method of Claim 9, wherein the receiver identification data includes a date stamp representing the date on which the receiver identification data was inserted into the data representing the television content.

12. (ORIGINAL) The method of Claim 9, wherein the receiver identification data includes a time stamp representing the time at which the receiver identification data was inserted into the data representing the television content.

13. (ORIGINAL) The method of Claim 9, wherein the receiver identification data is obtained from a removable access card that stores television channel access data and billing data.

14. (ORIGINAL) The method of Claim 9, wherein the receiver identification data is inserted into the data representing the television content by modifying saturation data of the television content.

15. (CANCELED)

16. (ORIGINAL) The method of Claim 9, and further comprising generating a display of program guide images, and inserting receiver identification data into data representing the program guide images prior to their display.

17. (PREVIOUSLY PRESENTED) A receiver for receiving broadcast television content having multiple frames of data and inserting receiver identification data into generated images of television content in a manner that is undetectable to a casual observer of such images, the receiver comprising:

- a tuner for receiving a plurality of television channels and outputting a first television channel;

- a buffer coupled to the tuner for storing a first image frame from the first television channel, the first image frame including a multiplicity of pixel data;

- a memory for storing identification data that provides a unique identification of the receiver;

- a controller coupled to the buffer and the memory, the controller retrieving identification data from the memory and changing values of the pixel data to values of the identification data, the controller thereby embedding multiple copies of the identification data into the first image frame; and

- a display generator for generating a display of the first television channel including the first image frame.

18. (PREVIOUSLY PRESENTED) A method of receiving broadcast television content having multiple frames of data with a receiver and inserting receiver identification data into generated images of television content in a manner that is undetectable to a casual observer of such images, the method comprising:

receiving a plurality of television channels with a tuner and outputting a first television channel;

storing a first image frame from the first television channel, the first image frame including a multiplicity of pixel data;

storing identification data that provides a unique identification of the receiver;

modifying a subset of the pixel data to represent the multiple copies of the identification data, multiple copies of the identification data thereby being embedded into the first image frame; and

generating a display of the first television channel including the first image frame.

19. (PREVIOUSLY PRESENTED) A program reception system comprising:
a receiver for receiving transmitted data representing program content comprising multiple frames;

means for modifying a frame of the data representing the program content to include multiple copies of receiver identification data; and

means for providing the modified data representing the program content to a presentation device.

20. (ORIGINAL) The apparatus of Claim 19, wherein the receiver identification data is selected from the group comprising:

a receiver serial number;

a name of an owner of the receiver;

an address of an owner of the receiver;

a phone number of an owner of the receiver;

a name of a manufacturer of the receiver; and

a model name of the receiver.

21. (ORIGINAL) The apparatus of Claim 19, wherein the receiver identification data includes a date stamp representing a date on which the data representing the program content was modified to include the receiver identification data.

22. (ORIGINAL) The apparatus of Claim 19, wherein the receiver identification data includes a time stamp representing the time at which the data representing the program content was modified to include the receiver identification data.

23. (ORIGINAL) The apparatus of Claim 19, further comprising a removable access card that stores program channel access data and billing data, and wherein the receiver identification data is obtained from the removable access card.

24. (ORIGINAL) The apparatus of Claim 19, wherein the program content includes television content and the receiver identification data is inserted into the data representing the program content by modifying saturation data of the television content.

25. (CANCELED)

26. (ORIGINAL) The apparatus of Claim 19, wherein the means for providing the modified data representing the program content to a presentation device provides a display of at least one program guide image, and wherein the means for modifying the data representing the program content to include receiver identification data inserts receiver identification data into data representing the program guide image prior to display of the program guide image.

27. (PREVIOUSLY PRESENTED) A method of modifying received program content comprising:

- receiving broadcast data representing program content having multiple frames;
- modifying a frame of the data representing the program content to include multiple copies of the receiver information data; and
- providing the modified data representing the program content to a presentation device.

28. (ORIGINAL) The method of Claim 27, wherein the step of modifying the data representing the program content to include receiver information data comprises the step of substituting receiver identification data for a subset of the data representing the program content.

29. (ORIGINAL) The method of Claim 27, further comprising the step of presenting the modified program content to the user on the presentation device.

30. (ORIGINAL) The method of Claim 27, wherein the receiver identification data is selected from the group comprising:

- a receiver serial number;
- a name of an owner of the receiver;
- an address of an owner of the receiver;
- a phone number of an owner of the receiver;
- a name of a manufacturer of the receiver; and
- a model name of the receiver.

31. (ORIGINAL) The method of Claim 27, wherein the receiver identification data includes a date stamp representing the date on which the receiver identification data was inserted into the data representing the program content.

32. (ORIGINAL) The method of Claim 27, wherein the receiver identification data includes a time stamp representing the time at which the receiver identification data was inserted into the data representing the program content.

33. (ORIGINAL) The method of Claim 27, wherein the receiver identification data is obtained from a removable access card that stores program channel access data and billing data.

34. (ORIGINAL) The method of Claim 27, wherein the program content comprises television content, and the receiver identification data is inserted into the data representing the program content by modifying saturation data of the television content.

35. (CANCELED)

36. (ORIGINAL) The method of Claim 27, further comprising the step of generating a display of program guide images, and inserting receiver identification data into data representing the program guide images prior to their display.

37. (PREVIOUSLY PRESENTED) A receiver for receiving transmitted program content having multiple frames of data, comprising:
a tuner, for receiving at least one of a plurality of program channels;
a memory, communicatively coupled to the tuner for storing at least a portion of data representing the program content;
a controller, communicatively coupled to the memory, the controller for modifying at least a portion of a frame of the data representing program content according to multiple copies of the receiver identification data.

38. (ORIGINAL) The receiver of Claim 37, wherein the program content comprises television content, the portion of data representing the program content comprises pixel data, and wherein:
the controller modifies at least a portion of the pixel data according to the receiver identification data.

39. (ORIGINAL) The receiver of Claim 37, further comprising a second memory, communicatively coupled to the controller, for storing the identification data.

40. (ORIGINAL) The receiver of Claim 37, wherein the identification data is selected from the group comprising:

- a receiver serial number;
- a name of an owner of the receiver;
- an address of an owner of the receiver;
- a phone number of an owner of the receiver;
- a name of a manufacturer of the receiver; and
- a model name of the receiver.

41. (ORIGINAL) The receiver of Claim 37, wherein the receiver identification data includes date data representing a date on which the data representing the program content was modified to include the receiver identification data.

42. (ORIGINAL) The receiver of Claim 37, wherein the receiver identification data includes time data representing a time at which the data representing the program content was modified to include the receiver information data.

43. (ORIGINAL) The receiver of Claim 37, wherein the receiver identification data is obtained from an access card communicatively coupleable with the receiver.

44. (PREVIOUSLY PRESENTED) An article of manufacture embodying logic for computing a plurality of order-based analysis functions for records stored in a table in a computer system comprising:

- receiving broadcast data representing program content having multiple frames;
- modifying a frame of the data representing the program content to include multiple copies of the receiver information data; and
- providing the modified data representing the program content to a presentation device.

45. (PREVIOUSLY PRESENTED) The television system of claim 1, wherein the means for inserting multiple copies of receiver identification data into data representing a frame of the television content comprise:
means for dividing the frame into a plurality of groups;
means for inserting a copy of the receiver identification data in each of the plurality of groups.

46. (PREVIOUSLY PRESENTED) The television system of claim 45, wherein the frame is an image frame, and each of the groups comprises a plurality of lines.

47. (PREVIOUSLY PRESENTED) The television system of claim 46, wherein each line comprises a plurality of pixels, and the means for inserting a copy of the receiver identification data in each of the plurality of groups comprises:
means for repeatedly substituting a bit of the receiver identification data for a bit of a pixel of the line and skipping a plurality of pixels, for each of the lines in the group.

48. (PREVIOUSLY PRESENTED) The method of claim 9, wherein the step of inserting multiple copies of receiver identification data into data representing a frame of the television content comprises the steps of:
dividing the frame into a plurality of groups; and
inserting a copy of the receiver identification data in each of the plurality of groups.

49. (PREVIOUSLY PRESENTED) The method of claim 48, wherein the frame is an image frame, and each of the groups comprises a plurality of lines.

50. (PREVIOUSLY PRESENTED) The method of claim 49, wherein each line comprises a plurality of pixels, and the step of inserting a copy of the receiver identification data in each of the plurality of groups comprises the step of:
repeatedly substituting a bit of the receiver identification data for a bit of a pixel of the line and skipping a plurality of pixels for each of the lines in the group.

51. (PREVIOUSLY PRESENTED) The receiver of claim 17, wherein the controller comprises:

means for dividing the first image frame into a plurality of groups;

means for inserting a copy of the receiver identification data in each of the plurality of groups.

52. (PREVIOUSLY PRESENTED) The receiver of claim 51, wherein the first image frame comprises a plurality of lines, and each of the groups comprises a plurality of lines.

53. (PREVIOUSLY PRESENTED) The receiver of claim 52, wherein each line comprises a plurality of pixels, and the means for inserting a copy of the receiver identification data in each of the plurality of groups comprises:

means for repeatedly substituting a bit of the identification data for a bit of a pixel of the line and skipping a plurality of pixels for each of the lines in the group.

54. (PREVIOUSLY PRESENTED) The method of claim 18, wherein the step of modifying a subset of the pixel data to represent the multiple copies of the identification data comprises the steps of:

dividing the first image frame into a plurality of groups; and

inserting a copy of the identification data in each of the plurality of groups.

55. (PREVIOUSLY PRESENTED) The method of claim 54, wherein each of the groups comprises a plurality of lines.

56. (PREVIOUSLY PRESENTED) The method of claim 55, wherein each line comprises a plurality of pixels, and the step of inserting a copy of the identification data in each of the plurality of groups comprises the step of:

repeatedly substituting a bit of the identification data for a bit of a pixel of the line and skipping a plurality of pixels for each of the lines in the group.

57. (PREVIOUSLY PRESENTED) The program reception system of claim 19, wherein the means for modifying the frame of the data representing the program content to include multiple copies of receiver identification data comprises:

means for dividing the frame into a plurality of groups;
means for inserting a copy of the receiver identification data in each of the plurality of groups.

58. (PREVIOUSLY PRESENTED) The program reception system of claim 57, wherein the frame is an image frame comprising a plurality of lines, and each of the groups comprises a plurality of lines.

59. (PREVIOUSLY PRESENTED) The program reception system of claim 58, wherein each line comprises a plurality of pixels, and the means for inserting a copy of the receiver identification data in each of the plurality of groups comprises:

means for repeatedly substituting a bit of the receiver identification data for a bit of a pixel of the line and skipping a plurality of pixels for each of the lines in the group.

60. (PREVIOUSLY PRESENTED) The method of claim 27, wherein step of modifying the frame of the data representing the program content to include multiple copies of the receiver information data comprises the steps of:

dividing the frame into a plurality of groups;
inserting a copy of the receiver identification data in each of the plurality of groups.

61. (PREVIOUSLY PRESENTED) The method of claim 60, wherein the frame is an image frame, and each of the groups comprises a plurality of lines.

62. (PREVIOUSLY PRESENTED) The method of claim 61, wherein each line comprises a plurality of pixels, and the means for inserting a copy of the receiver identification data in each of the plurality of groups comprises:

means for repeatedly substituting a bit of the receiver identification for a bit of a pixel of the line and skipping a plurality of pixels for each of the lines in the group.

XI. EVIDENCE APPENDIX

None.

XII. RELATED PROCEEDINGS APPENDIX

None.